

REMARKS

Claims 1, 4, 6, 8-17 and 63 are pending in the Application prior to the amendments herein, and are rejected.

Claim 1 is amended herein.

Claims 1, 4, 6, 8-17 and 63 are pending after entry of the amendments herein.

1. **Rejections Under 35 U.S.C. §103(a) over Smalley in view of Hampden-Smith**

The Examiner has rejected Claims 1, 6, 8-17 and 63 under 35 U.S.C. § 103(a) as being unpatentable over Smalley et al., U.S. Patent 6,683,783 B1 ("*Smalley*") in view of Hampden-Smith et al., U.S. Patent Publication 2003/198849 ("*Hampden-Smith*"). Final Office Action at page 2.

Applicant respectfully traverses the rejection.

In *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 82 U.S.P.Q.2d 1385 (2007), the Supreme Court noted that the obviousness analysis under § 103 should be explicit, and that it is important to determine whether there is "an apparent reason to combine the known elements in the fashion claimed" *Id.*, 127 S. Ct. at 1741.

Claim 1 has been amended to further require, *inter alia*, that the electrode comprises both a plurality of carbon nanotubes and "carbon black or carbon powder." The amendments are supported in the specification, such as, for example, at page 17, lines 1-12, page 18, lines 18-19, and page 18 line 29 to page 19, line 2.

Smalley does not teach or suggest a fuel cell electrode. Furthermore, neither *Smalley* nor *Hampden-Smith* suggests all the elements of Claim 1, as amended, which requires a fuel cell

electrode comprising a combination of carbon powder or carbon black together with a plurality of carbon nanotubes, wherein the carbon nanotubes comprise single-wall carbon nanotubes having a diameter of about 0.7 – 3.5 nm, wherein the single-wall carbon nanotubes are derivatized with a functional group, and wherein the plurality forms a mat of carbon nanotubes and carbon powder or carbon black, wherein the mat has a planar area and wherein the mat has a thickness greater than one micron and a catalyst metal comprising platinum (Pt) in contact with the mat of carbon nanotubes and carbon powder or carbon black, wherein the catalyst metal is present in an amount less than $400 \mu\text{g}/\text{cm}^2$ of the planar area of the mat of the carbon nanotubes and carbon powder or carbon black, and wherein the electrode provides greater than $1 \text{ mA}/\text{cm}^2$ per $\mu\text{g Pt}/\text{cm}^2$ of the planar area of the mat of carbon nanotubes and carbon powder or carbon black.

Furthermore, even if the teachings of *Smalley* and *Hampden-Smith* were combined, the combination would not achieve all the limitations of Claim 1, as amended, particularly the combination of carbon nanotubes with carbon black or carbon powder. The mentions of carbon black in *Smalley* and *Hampden-Smith* are in a different context and do not suggest the combination of claim 1. (See *Smalley* at column 5, lines 65-67 and column 33, lines 32-48, and *Hampden-Smith* at paragraphs 15, 196, 313, 333, and 442.) Thus, Claim 1 is not obvious over *Smalley* in view of *Hampden-Smith*.

Claim 6, 8-17 and 63 are dependent upon herein amended Claim 1 and are not obvious for the same reasons.

In light of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejection of Claims 1, 6, 8-17 and 63 under 35 U.S.C. § 103(a).

2. Rejections Under 35 U.S.C. §103(a) over Smalley in view of Hampden-Smith and further in view of Fisher

The Examiner has rejected Claim 4 under 35 U.S.C. § 103(a) as being unpatentable over *Smalley* in view of *Hampden-Smith* and further in view of Fisher et al., U.S. Patent 6,203,814 (“*Fisher*”). Final Office Action at page 4.

Applicant respectfully traverses the rejection.

Neither *Smalley*, *Hampden-Smith*, nor *Fisher* teaches or suggests all the elements of Claim 1, as amended, for example that a fuel cell electrode comprises a combination of carbon powder or carbon black together with a plurality of carbon nanotubes.

Therefore, even if the teachings of *Smalley*, *Hampden-Smith* and *Fisher* were combined, the combination would not achieve all the limitations of Claim 1, as amended.

Claim 4 is dependent upon Claim 1. Therefore, Claim 4 is not obvious for the same reasons that Claim 1, as amended, is nonobvious.

In light of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejection of Claim 4 under 35 U.S.C. § 103(a) as being unpatentable over *Smalley* in view of *Hampden-Smith* and further in view of *Fisher*.

3. Conclusion

As a result of the foregoing, Applicant asserts that the Claims are now in condition for allowance.

The Examiner is invited to contact the undersigned attorney at (713) 934-4094 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

WILLIAMS, MORGAN & AMERSON, P.C.
CUSTOMER NO. 23720

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/Kenneth D. Goodman/
Kenneth D. Goodman
Reg. No. 30,460
10333 Richmond, Suite 1100
Houston, Texas 77042
(713) 934-4094
(713) 934-7011 (fax)

ATTORNEY FOR APPLICANTS